EUROPEAN COMMISSION
DIRECTORATE-GENERAL FOR ENERGY

Directorate C - Renewables, Research and Innovation, Energy Efficiency
C.3 - Energy efficiency

Brussels, September 2017

Explanatory notes on the review of the Commission Regulation (EC) No 1275/2008 regarding the ecodesign requirements for standby and off mode, and networked standby, electric power consumption of electrical and electronic household and office equipment

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Contents

1. CONTEXT OF THE PROPOSAL

1.1. Legal framework

The Ecodesign Directive 2009/125/EC[1] establishes a framework for setting ecodesign requirements for energy-related products. It is a key instrument of EU policy for improving the energy efficiency and other aspects regarding the environmental performance of the products placed on the internal market. Article 16 of the Ecodesign Directive lists products which were initially identified by the Council and the European Parliament as priorities for the Commission for implementation, including consumer electronics, office equipment and domestic appliances. The reduced energy consumption in standby, off mode and networked standby of electrical and electronic household and office equipment addresses therefore groups of priority products.

The main regulatory framework that currently applies to ecodesign measures for standby, off mode and networked standby consists of:

- Commission Regulation (EC) No 1275/2008[2] of 17 December 2008 implementing Directive 2005/32/EC of the European Parliament and of the Council with regard to ecodesign requirements for standby and off mode electric power consumption of electrical and electronic household and office equipment;
- Commission Regulation (EU) No 801/2013[3] of 22 August 2013 amending Regulation (EC) No 1275/2008 with regard to ecodesign requirements for standby, off mode electric power consumption of electrical and electronic household and office equipment, and amending Regulation (EC) No 642/2009 with regard to ecodesign requirements for televisions.

Other additional regulations amend the Regulation (EC) No 1275/2008 by bringing clarifications on the scope and definitions used. These are: Commission Regulation (EC) No 278/2009, Commission Regulation (EC) No 642/2009, and Commission Regulation (EU) No 617/2013. Additionally the Commission Regulation (EU) 2016/2282 brings amendments with regard to the use of tolerances in verification procedures.

1.2. Grounds and objectives of the proposal

Article 7 in the Regulation 1275/2008 as amended by Regulation 801/2013 states that the regulation should be reviewed no later than 7th January 2016 in light of technological progress. This constituted the grounds for launching a review study in July 2015. Furthermore, the current Ecodesign Working Plan covering the period 2016-2019 includes this work item and reconsiders the timeline of the revision.

This review aims to harness all the opportunities to better contribute through this ecodesign measure to reach the EU energy efficiency target for 2030[4] of at least 27% savings. It also seeks to better provide for a level playing field in the EU internal market. Promotion of market uptake of energy efficient products with low standby, off mode and networked standby energy consumption supports also the objectives of the EU Sustainable Development Strategy[5] and encourages investments in research and development activities.

The objectives of the review study were to:

1 http://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX%3A32009L0125
2 http://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX:32008R1275
3 http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32013R0801
4 https://ec.europa.eu/energy/en/topics/energy-efficiency
5 http://ec.europa.eu/environment/eussd/

- Review the appropriateness of the scope of the amended regulation;
- Review the appropriateness and/or level of requirements for:
    - Standby and off operating modes, and,
    - Networked standby of non-HiNA equipment with regard to Tier III (applicable starting in January 2019);
- Clarify ambiguous terms and definitions in the current regulation that create loopholes and/or bring difficulties at the time of verifying the requirements.

The review study, supplemented by additional research and interviews, assessed that the amended Regulation remains highly relevant for electrical and electronic household and office equipment placed on the European market. In particular it showed that:

1. Further energy savings could be obtained by **extending the scope of the regulation to include adjustable furniture and local building controls**, and that technical solutions for these products to meet current standby and off requirements already exist;
2. Loopholes could be eliminated and a level playing field could be ensured by **removing the current exemption from the scope of products with low voltage external power supplies (LV EPS).** This would bring energy savings, ensure a consistent approach across different product groups and in particular address the problem of similar technologies that operate within different voltage ranges (i.e. products having LV EPS and being exempted, while other similar products being regulated);
3. Further energy savings could be made by **reducing the off mode consumption limit to 0.3 W**, and assessment showed that this is technically possible;
4. **Tier III level for non-High Network Availability (non-HiNA) products can be maintained as planned, starting in January 2019.** However, one product category (i.e. complex set-top boxes with DOCSIS network connection) should be exempted from Tier III level because it cannot comply with the reduced level of maximal consumption, and another product group (game consoles) should be exempted for one additional year because further technological development is needed;
5. **One particular technology should be excluded from the scope of the regulation** (i.e. projectors with mechanisms for exchanging the lenses) because this type of projectors are intended for use in large venues, mainly for professional applications, and cannot comply with current and future levels;
6. **Certain definitions are ambiguous and need revision** in order to avoid loopholes and facilitate the surveillance of the Regulation by the Market Surveillance Authorities (MSAs).

1.3. General context

The previous preparatory study carried out for the initial Regulation 1275/2008 estimated that: (i) the total energy consumption in standby and off modes for all products in scope was 47 TWh in 2005 and (ii) the consumption would have increased to 49 TWh in 2020 without an Ecodesign regulation being adopted. The current review study estimates that: (i) the energy consumption in standby, networked standby and off mode of all products in current scope will be approximately 14 TWh in 2020 and (ii) the consumption will increase to approximately 27 TWh in 2030 (due to rapid technological development leading to more products in scope having networked standby functionality, and the increased number of products sold on the European market). With regard to standby and off modes only, it is estimated by the current review study that the energy consumption of products in current scope will be approximately 5 TWh in 2020 increasing to 5.5 TWh in 2030, while the consumption of proposed extended scope will be around 7 TWh in 2020 going up to 9.5 TWh in 2030.

Thus, the existing legislation already brought important energy savings. However, these could be further enhanced. It should be noted that the Regulation applies to a large number of products in use in the EU: some 2.5 billion products estimated for 2020, growing to over 2.8 billion in 2030.

Analysis also revealed market and regulatory failures which, in case not addressed, would prevent the full realisation of the identified additional energy savings:

- Lack of interest from consumers and the lack of information on energy consumption in standby mode for adjustable furniture and local building controls. This allows potential high annual energy losses as these products are in standby mode about 98% of the time;
- Technologies for products in scope widely exist for complying with a lower off mode requirement level, but the full potential is not used yet;
- Due to the exemption of products with LV EPS, a possible loophole exists especially for categories of similar products which are using both LV EPS and non-LV EPS. Indeed, recent and rapid spread of new technologies and specifications used in external power supplies (such as the new USB Power Delivery Specification, introduction of USB Type-C, deployment of agile charging e.g. adaptive fast charging) are resulting in many products using these EPS falling now within the scope of the regulation, whereas previously they did not. At the same time, very similar products continue to be exempted and this creates unequal conditions for placing them on the market.

2. CONSULTATION OF INTERESTED PARTIES

The revision process of the Regulation started with the launch of the review study in July 2015. The revision has been undertaken in consultation with stakeholders including the representatives of Member States, standardisation organisations, manufacturers and their associations, environmental non-governmental organisations ('NGOs') and consumer organisations. A website for the revision was set up and documents have been made available in the public domain at: http://www.ecostandbyreview.eu/.

The final report on the review was published by the consultancy study team in April 2017. However, additional data and feedback have been collected and processed by the consultancy team since then, and is presented in the Annex of this explanatory memorandum (see Annex I – Background technical report). This report complements the findings of the final report of the review study and presents more detailed technical information that supports the conclusions and proposals put forward.

3. MARKET SIGNIFICANCE

The market of products in scope of the existing standby regulation has been significant and increasing rapidly in the EU. The estimated stock for the current scope is approx. 2.5 billion units by 2020 and approx. 2.8 billion units by 2030, and the estimated stock for the extended scope is approx. 2.6 billion units by 2020 and approx. 3.1 billion units by 2030. See Table 1 for the estimated stock for each product group in 2020 and 2030.

Table 1. Market stock estimation for 2020 and 2030 (based on Lot 6, Lot 26 and data estimated for extended scope).

Product	Product category	2020	2030
		Stock, million units	Stock, million units
Electric toothbrush	Household appliances	51	59

Product	Product category	2020	2030
		Stock, million units	Stock, million units
Clothes dryers	(current scope)	72	78
Dishwashers		115	149
Electric hobs		164	189
Electric oven		75	76
Washing machine		196	202
Radio	Consumer equipment (current scope)	117	118
DVD players		253	369
Audio mini-system		117	118
PC office peripheral	Information technology (current scope)	15	21
PC home peripheral		49	31
Laser printer		23	28
Inkjet printer		140	188
TV peripheral	Non-HiNA networked products (current scope)	99	86
Coffee makers		65	171
Audio speakers		49	31
Home NAS (Networked Attached Storage)		41	41
Home Inkjet Printer/MFD		84	93
Home EP Printer		7	9
Home Phones		141	141
Simple Set Top Box		123	99
Complex Set Top Box		113	151
Simple Player/Recorder		190	152
Complex Player/Recorder		28	37
Game Console		34	45
Office Inkjet Printer/MFD		23	23
Office EP Printer		10	10
Office Phones		85	96
Local building controls	Adjustable furniture and local building controls (extended scope)	78	126
Elevation beds		7	21
Height-adjustable desk		49	103
Non-networked product (current scope)		**1092**	**1185**
Total networked and non-networked (current scope)		**2479**	**2811**
Total (extended scope)		**2613**	**3061**

4. ECONOMIC SIGNIFICANCE

4.1. Extending the scope

The impact on industry revenue of extending the scope to adjustable furniture and local building controls has not been assessed due to scarce information available. However, the net annual energy costs savings from adjustable furniture and local building controls are estimated to be approximately 816 million EUR in 2030.

4.2. Reducing off mode consumption limit to 0.3 W

The economic significance from lowering the off mode requirement level to 0.3 W showed net cumulative savings for consumers in the order of 2.6 billion EUR by 2030. The improvement costs are associated only with adapting some technologies to 0.3 W levels as many products can already comply (see **Table 2** for detailed costs). The improvement costs are based on previous preparatory studies, and for this scenario only improvement related with lowering off mode consumption is considered.

Table 2. Consumer costs (by 2030) for changing all stock of current scope to achieve lower level in off mode by 2030, cumulative energy cost saving is calculated assuming 0.3 W in off modes.

Product	Product category	Improvement cost to consumers (mill EUR)	Energy cost savings (mill EUR)	Net cost saving (mill EUR)
Electric toothbrush	Household appliances	0	212	212
Clothes dryers		31	292	260
Dishwashers		60	509	449
Electric hobs		0	0	0
Electric oven		30	0	-30
Washing machine		81	704	623
TV peripheral	Consumer equipment	0	0	0
Radio		48	479	431
DVD players		149	219	70
Audio mini-system		48	29	-18
PC office peripheral	Information technology	8	21	12
PC Home peripheral		12	95	83
Laser printer		11	63	52
Inkjet printer		76	512	436
Total		**555**	**3,134**	**2,579**

4.3. Removing exemption for products with LV EPS

It is not possible to get data on the total industry revenue for all products with LV EPS, in order to calculate the economic impact of removing the exemption for these products. However, it is known that an increasing number of mobile phones, game consoles and small networked equipment (SNE) are equipped with LV EPS. The economic significance is therefore based on estimations for these three product groups.

The market value of products such as smartphones and mobile phones in Europe is estimated at 7.1 billion EUR in 2017 and at 7.6 billion in 2030[6]. The testing cost for compliance is estimated at approx. 1 million EUR per year. See details on assumptions and data sources in Annex I – Background technical report.

According to the impact assessment[7] regarding policy options for game consoles, the EU market for these products was around 5.5 billion EUR in 2008. It is estimated that total testing costs for compliance of the top seven major models of game consoles amounts to 36,400 EUR per year. See details on assumptions and data sources in Annex I – Background technical report.

In terms of complying with energy consumption levels, the proposed removal of exemptions will affect mainly the industry of small network equipment (SNE) with LV EPS, which potentially covers up to 16 million units sold per year. Some SNE products have been benefiting from the exemption, and these products would need to comply with the standby requirements as the regulation originally intended. It is however not possible to estimate the number of models that would need to be tested for compliance per year, as no data is available on the number of new models per year and no input was provided by the industry. See more details in Annex I – Background technical report.

[6] Estimated based on mobile manufacturers contribution to GDP in 2014 http://www.gsma.com/mobileeconomy/archive/GSMA_ME_Europe_2015.pdf

[7] http://ec.europa.eu/smart-regulation/impact/ia_carried_out/docs/ia_2015/swd_2015_0089_en.pdf

Based on the data and information presented in the above paragraphs for mobile phones and game consoles, it is possible to assume that the compliance costs are marginal compared to the volume of sales, and the economic impact on industry is therefore relatively small. The upcoming Impact Assessment for this review will investigate in more detail the matter and collect more information for other product groups.

4.4. Tier III consumption limit for non-HiNA equipment

It has not been possible to get sales data for the complex set-top boxes with DOCSIS network connections (non-HiNA), which are proposed to be exempted from Tier III requirements. Based on input from industry, the economic impact of exempting these products is considered marginal. The one year exemption from Tier III requirements for game consoles is also considered to have a marginal economic impact.

4.5. Other technologies

It has not been possible to get sales data for projectors with mechanisms for exchanging the lenses, which are proposed to be excluded from the scope of the regulation. These are niche products, mainly for professional use, and the impact of excluding these products is considered marginal.

5. ENVIRONMENTAL SIGNIFICANCE

Total energy consumption of standby/off modes for the current scope is approximately 5 TWh in 2020 and will increase to 5.5 TWh in 2030. Total standby/off mode and networked standby consumption is estimated at 14 TWh in 2020 and 27 TWh in 2030. The extended scope will add an additional consumption of 2 TWh in 2020 and 4 TWh in 2030. See Table 3 for details.

Table 3. Standby and off mode energy consumption of the current and proposed extended scope (in TWh/year).

	2020	2030
Current scope, standby and off mode energy consumption	4.75	5.54
Current scope, networked standby consumption	9.47	21.3
Current scope total	**14.2**	**26.9**
Extended scope, standby and off mode energy consumption	2.05	3.93
Extended scope total	**16.3**	**30.8**

As presented in Table 3, the networked standby consumption is estimated at 21 TWh in 2030 when applying the current regulatory requirements. The scenario of removing the Tier III requirement (i.e. reducing networked standby for non-HiNA equipment from 3 W to 2 W starting with 2019) would raise the consumption in networked standby to an estimated 34 TWh in 2030. Thus, the safeguarding of Tier III requirement maintains savings of approximately 13 TWh/year in 2030.

6. EXISTING LEGISLATION

The Regulation (EC) 1275/2008 on standby, off mode and networked standby is horizontal, and therefore is in principle applicable to all electrical and electronic household and office products within the scope. However, there are some exemptions partly because specific requirements on low power consumption modes have been included in the 'vertical' regulations applicable to certain product groups. The regulation was amended five times through:

- Commission Regulation (EC) 278/2009 for external power supplies

- Commission Regulation (EC) 642/2009 for televisions
- Commission Regulation (EU) 617/2013 for computers
- Commission Regulation (EU) 801/2013 for networked standby
- Commission Regulation (EU) 2016/2282 for the use of tolerances in verification procedures

Regulation (EC) 278/2009, (EC) 642/2009 and (EU) 617/2013 are vertical regulations for external power supplies, televisions and computers respectively. Since the vertical regulations are dedicated to a specific product group, the relevant products have been subsequently exempted from Regulation (EC) No 1275/2008 (in the case of 617/2013 only desktop computers, integrated desktop computers and notebook computers were exempted). A special note should be made here on LV EPS, where the vertical regulation addressed only the external power supply, whereas the Regulation 1275/2008 addresses the combination of the product and the external power supply. Substantial changes were brought by the Regulation (EU) 801/2013 that has introduced requirements regarding networked standby.

The proposed scope extension includes adjustable furniture and local building controls, which are currently not covered by any Ecodesign and Energy Labelling regulations. These products are incorporating motors and some of these motors could be covered by the specific ecodesign vertical regulation. However, the motors regulation covers only products with higher power (generally not used in the applications as the ones in the proposed scope extension) and does not contain ecodesign requirements for standby consumption. Therefore, there is no obvious overlap.

A number of directives and regulations in the EU address other aspects of the electrical and electronic products in scope. The Low Voltage Directive (LVD)[8] regulates health and safety aspects including e.g. mechanical, chemical, noise related and ergonomic aspects. Products in scope are covered by the scope of the LVD, but there is no overlapping in terms of the type of requirements proposed by the revised Regulation.

The WEEE Directive[9] sets requirements on recovery and recycling of Waste of Electrical and Electronic Equipment to reduce the negative environmental effects resulting from the generation and management of WEEE and from resource use. However, there are no overlapping requirements with the revised Regulation.

The RoHS Directive[10] restricts the use of six specific hazardous materials and four different phthalates found in electrical and electronic equipment, but there are no overlapping requirements with the revised Regulation.

The REACH Directive[11] restricts the use of Substances of Very High Concern (SVHC) to improve protection of human health and the environment, but does not overlap with the proposed revision of the Regulation.

The EMC Directive[12] sets requirements for the Electro-Magnetic Compatibility performance of electrical equipment to ensure that electrical devices will function without causing or being affected by interference to

[8] Directive 2006/95/EC of the European Parliament and of the Council of 12 December 2006 on the harmonisation of the laws of Member States relating to electrical equipment designed for use within certain voltage limits. OJ L 374, 27.12.2006

[9] Directive 2012/19/EU of the European Parliament and of the Council of 4 July 2012 on waste electrical and electronic equipment (WEEE). OJ L 197, 24.7.2012

[10] Directive 2011/65/EU of the European Parliament and of the Council of 8 June 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment. OJ L 174, 1.7.2011, p. 88.

[11] Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC.

[12] Directive 2004/108/EC relating to electromagnetic compatibility and repealing Directive 89/336/EEC. OJ L 390, 31.12.2004

or from other devices. The provisions of the EMC Directive apply to products in scope but do not overlap with the proposed revised Regulation.

7. IMPROVEMENT POTENTIAL

The review study has identified various improvements for the current regulation that would result in lower overall energy consumption and related emissions achievable at no perceived excessive life cycle costs for the products within scope.

Implementation of the requirements proposed in the revised Regulation would result in the following savings:

- Extending the scope to adjustable furniture and local building controls could result in 0.3 TWh/year savings in 2020 and 2.8 TWh /year savings in 2030. This is equivalent to a cumulative saving of 16.7 TWh by 2030 (see **Table 4**).
- Lowering the off mode requirement to 0.3 W for the current scope could yield a saving of 0.7 TWh/year in 2020 and 1 TWh/year in 2030. This is equivalent to a cumulative saving of 11 TWh by 2030 (see **Table 5**).
- Removing LV EPS exemptions could yield an annual saving of 30 GWh if the share of small network equipment with LV EPS is 2.5 % or an annual saving of 362 GWh if the share with LV EPS is 30%. See **Table 6** for more details. However, these savings are only quantified, due to the lack of information, for small network equipment (SNE). Two different scenarios, according to possible levels of market coverage, were considered for SNE with LV EPS. However, these savings are far from presenting the full potential for the vast number of products placed on the market with a LV EPS.
  The removal of this exemption will reap the following main benefits: (i) guarantee that all products comply with the requirements of the regulation (whereas now only an anecdotal compliance with regard to power consumption is evoked by some stakeholders); (ii) ensure a level playing field in the market without entailing excessive costs for the industry (and in particular address the problem of similar equipment being treated differently when functions with LV EPS compared to when it has non-LV EPS); (iii) make available information on a vast category of products for which consumption figures in low power modes are virtually non-existent.

Table 4. Potential annual and cumulative energy savings from standby energy consumption applied to the extended scope (adjustable furniture and local building controls).

	Potential annual energy savings (TWh/year)			Cumulative energy savings (TWh)		
	2020	**2025**	**2030**	**2020**	**2025**	**2030**
Height-adjustable desks	0.15	0.74	1.56	0.22	2.57	8.90
Elevation beds	0.01	0.08	0.18	0.02	0.25	0.97
Local building controls	0.13	0.60	1.03	0.20	2.17	6.83
Total	**0.29**	**1.41**	**2.83**	**0.43**	**4.98**	**16.70**

Table 5. Potential energy savings from setting 0.3 W requirement for off mode only for current product scope.

Potential annual savings (TWh/year)			Cumulative energy savings (TWh)		
2020	**2025**	**2030**	**2020**	**2025**	**2030**
0.68	**0.97**	**1.03**	**1.35**	**5.93**	**10.98**

Table 6. Potential energy savings based on market assumption from review study on EPS and industry stakeholder consultation.

	30 % SNE w. LV EPS	2.5% SNE w. LV EPS
Amount of small network equipment exempted	7,577,143 units	631,429 units
Stock (assuming 4 years lifetime)	30,308,571 units	2,525,714 units
Average networked standby consumption of SNE consuming more than the current HiNA limit 8 W	9.53 W	9.53 W
Energy savings, GWh/year	**362**	**30**
Cumulative energy savings after 4 years, GWh	**1811**	**151**

8. PROPOSED MEASURES

The preparatory study for standby and off mode losses (Lot 6, 2007) indicated the need for further research on networked products. Subsequently the preparatory study for networked standby (Lot 26) was carried out in 2011. These studies showed that there was an important potential for energy savings and a need for EU action. The potential savings from setting ecodesign requirements on standby and off modes were estimated at 35 TWh/year by 2020 and potential savings from networked standby were estimated at 36 TWh/year by 2020. By implementing the measures proposed in this review, additional savings of approximately 4 TWh/year by 2030 could be ensured.

The proposed revision of the Regulation addresses product scope and revises some of the requirements. Furthermore, some definitions should be improved to facilitate surveillance and close potential loopholes.

Scope changes in the working document:

- Extending the scope by adding “adjustable furniture” and “local building controls” to Annex I of the Regulation;
- Removing the exemption of products placed on the market with LV EPS;
- Exempting “projectors with mechanisms for exchanging the lenses with others with different focal length”.

Changes of requirements in the working document:

- Lowering maximum power consumption in off mode to 0.3 W;
- Exempting complex set-top boxes with DOCSIS network connection from Tier III requirements for non-HiNA equipment, and exempting game consoles - for one additional year only - from Tier III requirements.

Changes and/or addition of definitions to remove ambiguity and facilitate the surveillance of the regulation:

- Clarify and complete the applicability of product information requirements by expanding the current requirement for networked products to non-networked products;
- Clarify what 'main function' is, relate it with the intended use, and add a product information requirement in the technical documentation;
- Further detail the requirement regarding the possibility to deactivate wireless network connection(s) by considering the appropriateness for the intended use;
- Specify the possibility to manually deactivate the wired network ports during verification in order to address the issue of ports that rely on an active network connection.

8.1. Staged implementation and ecodesign requirements

The following subsections present details on the proposed changes.

8.1.1. Extending the scope

The review study proposed that the scope could be extended and the exemption for products with LV EPS should be removed. The proposed changes in the scope of the Regulation are as follows:

In Annex I of the Regulation the following points are added:

5. Adjustable furniture

Height-adjustable desks, Eelevation beds and chairs, And other adjustable furniture equipped with electric motors operated by wired or wireless controls.

6. Local building controls used in products such as:

Shutters, Blinds, Screens, Awnings, Pergolas, Curtains, Doors, Gates, Windows, Skylights, And other similar products equipped with electric motors operated by wired or wireless controls.

These are supported by the following definitions added in Article 2:

42. 'adjustable furniture' means furniture that includes motors, actuators, lifting columns or other electric means employed for adjusting height, position or form. These adjustments are operated by the end user through wired and/or wireless controls or via a network.

43. 'local building controls' are products that move or rotate access elements and/or climatic control elements used in buildings. The products incorporate electric motors or actuators and the control unit as one entity and are operated by the end user through wired and/or wireless controls or via a network, or controlled automatically with the use of sensors.

The applicability of the Regulation to adjustable furniture and local building controls will start 30 months after the entry into force of the revision. The following sentence is added in Article 8 (Entry into force):

Points 5 and 6 of Annex I shall apply as from 30 months after the date referred to in the first paragraph.

In Article 1 the following phrase is removed:

This Regulation shall not apply to electrical and electronic household and office equipment placed on the market with a low voltage external power supply to work as intended.

However, a transitional period of 1 year is provisioned for these products to ensure compliance. The following sentence is added in Article 8 (Entry into force):

This Regulation shall apply as from 12 months after the date referred to in the first paragraph to electrical and electronic household and office equipment placed on the market with a low voltage external power supply to work as intended.

8.1.2. Reducing the off mode consumption limit to 0.3 W

Based on the review study, the off mode energy consumption could be reduced and further energy savings could be achieved by introducing a more stringent requirement. Although reducing the standby consumption is still difficult to be addressed in a horizontal regulation covering a very wide scope (see Annex I – Background technical report), the reduction of the off mode consumption is perfectly feasible and will reap much of the potential energy savings. The off-mode requirement is therefore revised.

In Annex II of the Regulation a new point is inserted, as follows:

2. Two years after the regulation has come into force:

In addition to the requirements set out in point 1(b), (c) and (d), the following provisions shall apply:

(a) Power consumption in 'off mode'

The power consumption of equipment in any off-mode condition shall not exceed 0,30 W.

Thus, the new limit for off mode power consumption will become effective two years after the revised Regulation is adopted.

Additionally, the second paragraph of Annex IV (Benchmarks) is amended, based on the findings of the review study, as follows:

*Off mode: 0 W-0,~~3~~**2** W with hard-off switch on the primary side, depending, inter alia, on the characteristics related to electromagnetic compatibility pursuant to Directive 2004/108/EC.*

8.1.3. Keeping the Tier III consumption limit for non-HiNA networked equipment, while allowing limited exemptions

Based on the review study, no change is proposed to the maximum power consumption in networked standby in Tier III (as applicable starting in January 2019).

However, the study showed that it is not technically possible for non-HiNA complex set-top boxes with DOCSIS network connection to comply with the reduced power limit of 2 W in Tier III. Therefore the 3 W limit is maintained for this specific type of set-top boxes.

The study also showed that game consoles need further development to be able to comply with the Tier III level. However, here the improvements needed are minimal and within technical reach, therefore an additional year of delay is proposed for reaching compliance.

The attached Background Technical Report provides more details on both these issues.

Thus, the Regulation would be amended as indicated below.

In Annex II of the Regulation the following clause will be added to the (new) point 5:

The power consumption limit as stipulated above shall not apply to complex set-top boxes with DOCSIS network connection and to games consoles.

A new point will be added after that, stating:

As of 1 January 2020:

In addition to the requirements set out in point 3(a) and (b) and point 4(a), (b) and (c), the following provision shall apply for networked equipment other than HiNA equipment or other than equipment with HiNA-functionality:

The power consumption of networked equipment other than HiNA equipment or other than equipment with HiNA functionality, in a condition providing networked standby into which the equipment is switched by the power management function, or a similar function, shall not exceed 2,00 W.

The power consumption limit as stipulated above shall not apply to complex set-top boxes with DOCSIS network connection.

Additionally, the following definition of games consoles will be added in Article 2 - Definitions:

41. 'games console' is a computing device whose primary function is to play video games and which shares many of the hardware architecture features and components found in general in personal computers (e.g. central processing unit(s), system memory, video architecture, optical drives and/or hard drives or other forms of internal memory).

8.1.4. Other technologies – remove from the scope the projectors with mechanisms for exchanging lenses

Projectors intended for use in larger venues, halls etc. currently fall under the scope of the Regulation because they could be considered to be part of the definition of consumer equipment (Annex I, point 3) due the part of the definition stating "...other equipment for the purpose of recording or reproducing sound or images...". These specific projectors, intended mainly for professional applications, cannot comply with applicable ecodesign requirements and should be clearly excluded from the scope. A definition of those is based on the fact that they have mechanisms to exchange lenses with others having different focal length in order to adapt the projection to various sizes of the venues.

In Annex I the last sentence at point 3 is revised accordingly, by adding the text in boldface as shown below:

*And other equipment for the purpose of recording or reproducing sound or images, including signals or other technologies for the distribution of sound and image other than by telecommunications, but excluding televisions as defined in Commission Regulation (EC) No 642/2009**, and excluding projectors with mechanisms for exchanging the lenses with others with different focal length***.

8.1.5. Clarification of definitions

Product information requirements

Product information requirements, included in the amendment brought by the Regulation 801/2013, specify that data and information should be available on manufacturers' freely accessible websites, but this applies only to networked equipment (Annex II, point 7 – Product information requirements).

MSAs have reported this as a problem as data is not readily accessible for many other products in the scope of the Regulation, but which are not networked equipment. Instead only the technical documentation provides that sort of information. This creates a discrepancy with regard to the access to information for similar products.

Thus, the specific clause regarding information requirement (point 7 of Annex II) is modified as follows:

*"As of 1 January 2015, the following information for **all** ~~networked~~ equipment **as applicable** shall be visibly displayed on manufacturers' freely accessible websites:*

*(a) for each standby and/or off mode and/**or** the condition providing networked standby into which the equipment is switched by the power management function or similar function:…*"

The user manual shall also include the information mentioned above, as these are important information for the consumers.

Main function and intended use

The current Regulation does not include a specific definition of the term "main function". However, the term is being referred to in the definitions of "reactivation function", "active mode" and "HiNA equipment" as well as in the requirement of power management for non-networked and networked equipment. Furthermore, the term is used both in singular and in plural.

The stakeholder consultation identified disagreements in interpretation between industry and MSAs on whether a product is performing a main function during a certain condition. Problems could also be created by artificially adding functions viewed as 'main function' in order to avoid establishing a power management function.

'Intended use' is mentioned in cases when products could be exempted from requirements for availability of standby/off modes, power management function, and possibility of deactivating wireless network connections. Exemptions could be claimed when doing otherwise would be inappropriate for the intended use of the product. In such cases technical justification for the inappropriateness has to be provided in the technical documentation. However, it was found that the technical justification is often vague or simply a claim with no supporting evidence.

Furthermore, intended use and the actual use of some products could be different in certain circumstances. According to MSAs, manufacturers can avoid adapting their products to the requirements of the regulation by stating that the application of the standby mode is inappropriate for the intended use of their products.

If the manufacturer would clearly state the main functions in the technical documentation and these would be related to the intended use, it would prevent potential misinterpretations and abuses of these terms.

The following amendments are introduced in the regulation in order to solve the above-mentioned ambiguities:

1. Adding a definition in Article 2 (after the current paragraph 3) as follows:

'main function(s)' means the main service(s) for which a product is designed for and that correspond to the intended use of the product.

2. Adding an information requirement in Annex II, point 9 (Information to be provided by manufacturers) as follows:

"(e) A description of the main function(s) of the product."

Deactivation of wireless network

The regulation states in Annex II, point 3a that any networked equipment that can be connected to a wireless network shall offer the user the possibility to deactivate the wireless network connection(s). However, it also states that this requirement does not apply to products which rely on a single wireless network connection for intended use and have no wired connection.

Industry claims that this requirement is not appropriate for some products like alarm systems (e.g. with wireless connection to sensors), accessories operating through Bluetooth and other wireless interfaces but with different functionality of each wireless interface, or wireless adapters such as access points. They therefore suggest that this requirement is exempted for products where the deactivation of the port is inappropriate for intended use.

Since the preparation of the text of the Standby Regulation there has been a strong increase in the deployment of wireless networks, and a variety of new wireless products have been introduced to the market. Thus, an amended phrasing of this requirement is needed for bringing further clarifications.

The following amendment of the point 3(a) of Annex II is therefore proposed:

"(a) Possibility of deactivating wireless network connection(s)

*Any networked equipment, **other than HiNA equipment or equipment with HiNA functionality,** that can be connected to a wireless network shall, **unless inappropriate for the intended use,** offer the user the possibility to deactivate the wireless network connection(s). This requirement does not apply to products which rely on a single wireless network connection for intended use and have no wired network connection."*

Manual deactivation of wired network ports during the verification procedure

There is a need to specify the possibility of manual deactivation of a certain kind of wired network ports during the verification procedure. This was revealed during recent exchanges with the European Standardisation Organisations that are drafting measurement standards for networked standby power consumption. The

problem encountered was that for a few specific technologies (e.g. DOCSIS) the disconnection of the cable from the wired network port activates a mechanism in the device that will continuously attempt to scan for a downstream frequency (RF signal) to recover. This behaviour will increase the power consumption. On the other hand, the disconnection of the cable is not the normal intended use of these devices.

The following phrase, agreed with the standardisation experts, is added in the verification procedure (Annex III):

"If a product relies on active cable connection(s) to one or more network port(s) for the intended use, manual deactivation of these network port(s) is allowed instead of cable disconnection."

9. MEASUREMENTS AND CALCULATIONS

Measurements and calculations of the relevant product parameters should be performed taking into account the generally recognised state-of-the-art calculation and measurement methods. In this context, manufacturers may apply reliable, accurate and reproducible measurement and calculation methods and harmonised standards set up in accordance with Article 10 of Directive 2009/125/EC, as soon as they are made available and published for that purpose in the Official Journal of the European Union.

The current version of the transitional method (Official Journal 2016/C 460/01[13]) lists the references to harmonised standards to use for declaring compliance with Regulation (EC) No 1275/2008.

Removing the exemption of products with LV EPS (including battery-driven products with LV EPS) would mean that these products will be now covered by the Regulation and will need to prove compliance.

Regarding testing of standby consumption for products with rechargeable batteries, the standard EN 50564:2011 or IEC 62301 specifies the preparation for testing, which can be the basis for clarification in the guidelines accompanies the regulation[14]. These guidelines have already explained that a maintenance mode is not standby mode. "Trickle-charging", an issue raised by the industry for testing standby mode, is also mentioned as "float" or "maintenance" modes by the standard, and this mode is not standby either. The following clarification for testing products with rechargeable batteries could be added in the guidelines accompanies the regulation:

For products containing a recharging circuit, the power consumed in

- *off mode and standby mode shall be measured after precautions have been taken to ensure that the battery is not being charged during the test, e.g. by removing the battery where this is possible, or ensuring that the battery is kept fully charged if the battery is not removable;*

- *a maintenance mode shall be measured with the batteries installed and fully charged before any measurements are undertaken.*

10. BENCHMARKS

Based on the currently available technologies, benchmarks for power consumption in off mode, standby mode and standby with display as well as networked standby are given in the revised Annex IV. Most of the

[13] http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=uriserv:OJ.C_.2016.460.01.0001.01.ENG
[14] https://ec.europa.eu/energy/sites/ener/files/documents/guidelines%20for%20SMEs%201275_2008_oct_09.pdf

benchmarks are still representative for the best performing products on the market today, with the exception of 'off mode' which was slightly revised (i.e. decreased from 0.3 W to 0.2 W).

11. CONFORMITY ASSESSMENT

As required by Article 8 of the Ecodesign Directive 2009/125/EC the proposed Regulation specifies the applicable conformity assessment procedures, which should be based on an internal design control or a management system as described in Annexes IV and V of the Directive 2009/125/EC. Other conformity assessment procedures described in Annex II of Decision 768/2008/EC[15] are considered not duly justified and proportionate to the risk in this case. For the purposes of conformity assessment, the technical documentation shall contain the product information set out in the current point 9 of Annex II of the Regulation.

12. VERIFICATION PROCEDURE FOR MARKET SURVEILLANCE PURPOSES

When performing the compliance checks referred to in Article 3 (2) of Directive 2009/125/EC, the Market Surveillance Authorities in the Member States shall apply the verification procedure described in Annex III of the Regulation 1275/2008, as amended by the Regulation 2016/2282. Annex III also specifies the verification tolerances, relating only to the verification of the measured parameters by Member State authorities and shall not be used by the manufacturer or importer as an allowed tolerance to establish the values in the technical documentation. No changes are proposed to the tolerance levels laid down in Annex III.

13. REVIEW CLAUSE

The main issues for a possible future revision of the proposed Regulation are:

- the requirements for standby mode;
- the requirements for networked standby for HiNA equipment and equipment with HiNA functionality;
- reassess any exemptions from non-HiNA Tier III requirements;
- assess the consumption in networked standby of new products falling normally into non-HiNA category but having enhanced functionalities (e.g. coordinating the communication in small ad-hoc local networks) with a view to better categorise them;
- the possibility of extending the scope to other fast-growing groups of products (e.g. smart plugs);
- the possibility of extending the scope to professional equipment.

Taking into account both the rapid technological development in this sector, and the time needed to collect and analyse new data, a review can be presented to the Consultation Forum four years after the entry into force of the revised Regulation.

[15] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:218:0082:0128:en:PDF

ANNEX I – BACKGROUND TECHNICAL REPORT

1. Introduction

The aim of this report is to provide the necessary technical background information concerning the last updates to our proposal measures, which are additional to the recommendations drawn in the final report of the review study on the Standby Regulation[16]. These additional updates have been discussed with the Policy Officer and have incorporated the stakeholders' latest inputs.

2. Proposed 0.3 W for off mode requirement

Introduction

The level of requirement for standby/off modes is 0.5 W in the Standby Regulation. In the report of the review study on the regulation 1275/2008, the study team assessed the potential energy savings of lowering the level to 0.3 W. This was based on the conclusion that most of the products assessed at that point in time, falling under the scope of the regulation, could comply with that level. However, further input from industry indicates that the scope of the assessment was not representative to the whole spectrum of products covered by the regulation. After assessment of this input, the study team finds it possible to lower only the off mode level with the knowledge that the functionality of the products in off mode shall be almost reduced to no activity (allowed is only indication of off-mode condition and ensuring electromagnetic compatibility compared to standby where the reactivation function shall be available).

An assessment of the potential energy savings has been done only for off mode.

Potential energy savings for current scope

The potential energy savings from setting 0.3 W as off mode consumption limit for current scope is estimated the same way as in the review report for both off and standby mode. However, in the new policy scenario, the standby consumption in average for all products are assumed to remain as in the BAU as 0.45 W, whereas the off mode consumption is reduced to 0.3 W from the BAU 0.45 W for all products in current scope. See Table 7 for the potential energy savings from lowering off mode consumption limit and the original estimated savings of lowering off and standby mode consumption.

Table 7. Potential energy savings from setting 0.3 W requirement for off mode only for current product scope.

Policy scenarios	Potential energy savings	2020	2025	2030
0.3 W for off mode only	Annual savings (TWh/year)	0.68	0.97	1.03
	Cumulative savings (TWh)	1.35	5.93	10.98
0.3 W for standby and off mode	Annual savings (TWh/year)	1.2	1.7	1.8
	Cumulative savings (TWh)	2.4	10.4	19.4

The potential energy savings from setting 0.3 W as off mode requirement limit for proposed extended product scope are the same as those for the current scope. Products equipped with electric motors operated via remote controls are in standby mode for 98% of the time, and active in the rest 2 % of the time. There is

[16] Review study on Standby Regulation. Final report – final version. Viegand Maagøe, April 2017. Available at: http://www.ecostandbyreview.eu/

no operational time in off mode, and therefore there are no additional savings to be yield from setting a more stringent off mode requirement alone.

3. No exemption for low voltage external power supplies

Introduction

The Standby Regulation does not apply to electrical and electronic household and office equipment placed on the market with a low voltage external power supply (LV EPS) to work as intended.

This section explores the impacts of removing the exemption for products placed on the market with LV EPS. The aspects presented here are based on the associated burdens by removing this exemption, based on input from stakeholders. The product groups that have been assessed in this section are those which are believed to represent some of the highest volumes on the EU market, and where an approximate number of models operating with low voltage external power supplies could be estimated based on available data or data provided by industry.

The inclusion of LV EPS in standby regulation would increase the total energy savings from standby consumption. However, no assessment of potential energy savings could be estimated since very few data exists on the current stock and energy consumption of these products on the market.

Impact on mobile phones industry

The mobile subscriber penetration Europe is estimated 84% in 2016 and it is predicted to reach 87% by 2020, and smartphone adoption by the European mobile owners is estimated to grow from 65% in 2016 to 75% in 2020[17].

Table 8 shows an approximate number of models of mobile phones on sale in the EU. These brands represent the largest shares on the global market. These estimates were established to compare with the calculated potential costs of testing new mobile phone models in the EU, which come with new models of EPS.

Out the of above brands, Oppo may still have relatedly lower market share in the EU, while the other brands together cover a large portion of the EU mobile market.

[17] GSMA (2017), The Mobile Economy

Table 8. Estimated number of models on sales in the EU based on desk research online and global market share of the brands.

Brand	Number of models on sale in EU	Global market share %[18]
Samsung	17[19]	20.5% (2016)
Apple	5[20]	14.4% (2016)
Microsoft	29[21]	9.9% (2014)
LG	22[22]	4% (2014)
Huawei	16[23]	8.9% (2016)
Sony	57[24]	2%(2014)
Oppo	36[25]	5.7% (2016)
ZTE	8[26]	2.9% (2014)
Total	**190**	

In 2014, globally Apple released two models, Samsung released 56, LG 41, however Samsung has since decided to cut the line-up by 30 %[27], and it can be expected that other companies that will follow the trend of cutting down number of models, as new competitors emerge onto the low-end market in the recent years.

The additional burden for mobile industry, if LV EPS is no longer exempted from the scope of standby Regulation, is mainly testing and reporting costs for providing compliance with standby regulation, as some mobile manufacturers already expressed. it is a known fact that mobile phones have been very efficient and continuously improving efficiency, therefore have no major problem with the standby and networked standby requirements. Hence, only the testing burden will be assessed as the impact on the industry.

It is assumed that every year each of the brand listed above release 1/3 of the number of models on sales, as the models on sales usually extend up to new releases from the previous 3 years. Testing and reporting costs from a professional laboratory would cost around €1300[28] for standby requirements and slight more for networked standby, however in-house testing using manufacturers' own laboratory and staffs, the costs would be less. The total number of new models from above brands sum up to 63 per year, and the brands cover roughly 67%[29]. It is thus estimated that the number of new models entering EU countries is 95 currently and reaching up to 100 by 2030. The growth of number of models follows the mobile penetration rate in Europe. Assuming each model on average undertakes 4 unit tests to keep it consistent with game consoles (see more details below); 4 unit tests for standby and 4 unit tests for networked standby, the total testing and reporting costs for the manufacturers is estimated in table below. Compared with total market value of mobile manufacturing industry, the testing cost is very small and can therefore be considered marginal.

[18] https://en.wikipedia.org/wiki/List_of_best-selling_mobile_phones#2016.5B41.5D
[19] http://www.samsung.com/dk/smartphones/
[20] https://www.apple.com/uk/iphone/compare/
[21] https://www.microsoft.com/en/mobile/phones/lumia/#order_by=latest
[22] http://www.lg.com/dk/mobiltelefoner
[23] http://m.huawei.com/dkmobile/consumer/mobile-phones/index.htm
[24] https://www.sonymobile.com/global-en/products/phones/
[25] https://www.mobile57.com/eu/phones/oppo/
[26] http://www.ztedevices.co.uk/smartphones/
[27] https://arstechnica.com/gadgets/2014/11/samsung-decides-56-smartphones-a-year-is-too-many-will-cut-lineup-by-30/
[28] Personal communications with a major EU laboratory
[29] https://www.statista.com/statistics/632599/smartphone-market-share-by-vendor-in-europe/

Table 9. Estimation of testing costs for mobile industry, compared with total market values of mobile manufacturing in Europe.

	2017	2020	2025	2030
Testing and reporting costs	983,085 EUR	1,005,370 EUR	1,020,542 EUR	1,035,942 EUR
Market values of mobile manufacturing in Europe[30]	7.1 billion EUR	7.2 billion EUR	7.4 billion EUR	7.6 billion EUR

This estimation is assuming all new models would be supplied with a LV EPS to work as intended, however some mobile phones may be supplied with EPS that are not low-voltage by the definition in current version of standby Regulation, therefore they would be needing to comply with the requirements nonetheless, and some mobile phones are delivered without an EPS and hence the costs are not additional costs due to this removal of exemption.

Impacts on game consoles industry

Table 10 shows the yearly sales in Europe for the major game consoles models. These models should cover the largest market share in Europe. Sales data is obtained from VGChartz. These yearly sales, as for the mobile phones, were established so a comparison with the costs of testing was possible.

[30] Estimated based on mobile manufacturers contribution to GDP in 2014 http://www.gsma.com/mobileeconomy/archive/GSMA_ME_Europe_2015.pdf

Table 10. 2016 yearly sales in Europe for game consoles.

Platform	Yearly sales in Europe, 2016
PlayStation 4	6,665,272
Xbox One	2,240,309
Nintendo 3DS	2,087,735
PlayStation Vita	725,893
Wii U	598,365
PlayStation 3	215,080
Xbox 360	81,892
Total	**12,614,546**

It should be noted not all game console models are currently equipped with a LV EPS. In table above, only PlayStation Vita and Nintendo 3DS are known for having LV EPS, which account for almost 3 million units per year sales in 2016.

Impact assessment of the voluntary agreement for game consoles indicated that for the mandatory ecodesign requirements on power consumption, the testing/compliance costs are in the range of 500 EUR and 800 EUR, and in comparison with the sales figures, the costs would be in the area of one-hundredth of one eurocent per unit, i.e. negligible[31]. The testing/compliance costs assumed in current study are higher i.e. 1300 EUR. There are 7 models (although only 2 of 7 are known to have LV EPS as mentioned) on the market covering the largest market share, and each model undergoes 4 unit tests. If one unit is randomly chosen for testing and in case of showing values exceeding 10% or 0.1 W of the limit, three more units will be tested to determine the compliance[32] . The total cost amounts to 36,400 EUR for all 7 models. The impact assessment also stated that the EU market for game consoles was approx. 5.5 billion EUR in 2008.

Impacts on Small Networked Equipment (SNE)

No new information compared to the review study report about the market share of SNE with LV EPS is known. SNE data for 2014 from Digital Europe covering routers, gateways and modems shows annual EU sales of 52,000,000 units. Based on previous work for the review study of External Power Supplies, it was assumed that 30% of them are LV EPS, resulting in 15,600,000 units. Based on NRCAN[33] data on EPS, there are approx. 30% EPS that are under 6 V and power output under 12 W (as most domestic SNE consume 12 W or less), matching the assumption made in the previous study (i.e. that 30% of SNE ads LV EPS).

There is scarce data on small network equipment, as it highly depends on the definition of "small" and even more uncertain data on small network equipment with LV EPS. In general, a stakeholder has in-formed that they bring out a new small network equipment every 2 years, but not necessarily with new EPS. If the EPS needs to be redesigned due to energy efficiency requirement, other testing costs would be implied due to re-run tests (e.g. for EMC and tests for other directives[34]).

[31] EU Impact assessment for game consoles http://ec.europa.eu/smart-regulation/impact/ia_carried_out/docs/ia_2015/swd_2015_0089_en.pdf

[32] Estimated number of tests is based on testing methodology described in Annex A of Self-Regulatory Iniative 22 April 2015 https://ec.europa.eu/energy/sites/ener/files/documents/Games%20Consoles%20Self-Regulatory%20Initiative%20V1%20-%20Final.pdf

[33] Natural Resources Canada http://oee.nrcan.gc.ca/pml-lmp/index.cfm?action=app.formHandler&nr=1#searchResults

[34] According to input from DIGITAL EUROPE

Testing for standby consumption for battery-driven products with LV EPS

The industry has expressed concern about the measurement method of standby consumption for battery operated products with LV EPS. Digital Europe stated in their comment for the review study that it is difficult to determine and to test the state of the product at a certain moment of time, because:

- Products with NiCd or NiMH batteries such as portable vacuum cleaners need a trickle charge, which means charging a fully charged battery at a rate equal to its self-discharging to maintain its full load.
- Products with Li-Ion battery need to be topped up during a certain percent of the time, i.e. when the built-in battery monitoring software tells the charging circuit to charge again.

As already written in the standby review report, "contrary to the opinion of some stakeholders, products driven by batteries have never been exempted from the Standby Regulation", without removing this exemption, there are still many battery-driven products (not using LV EPS) would have to comply with the standby requirements.

Regarding testing of standby and low power modes consumption for products with rechargeable batteries, the standard IEC 62301 specifies the preparation for testing:

For products containing a recharging circuit, the power consumed in

- *off mode and standby mode shall be measured after precautions have been taken to ensure that the battery is not being charged during the test, e.g. by removing the battery where this is possi-ble, or ensuring that the battery is kept fully charged if the battery is not removable;*
- *a maintenance mode shall be measured with the batteries installed and fully charged*

A clarification of the above preparation for testing can be added in the guidance document of the Standby Regulation. Regarding "trickle charge" testing issue, the guideline has already explained that a maintenance mode is not standby mode. "Trickle-charging" is also mentioned as "float" or "maintenance" modes by the standard IEC 62301, therefore this mode is not standby. "Maintenance mode" consumption can be measured since the test standard specifies how to test this mode as well.

The "sampling method" described in the test standard could be useful for products with trickle charge for testing "maintenance mode". For products that top up battery during a certain period of time these modes can be measured with "sampling method" or "average reading method" as long as the battery is ensured to be fully charged.

Sampling method have two variations: one for where the power consumption within a mode is cyclic, and one for power consumption within a mode is not cyclic.

Average reading method apply to products where different modes occur in a regular pattern, and it re-quires the product to have been allowed to stabilise for at least 30 minutes.

Proposed exemption by Digital Europe

Figure 1 shows the proposed exemption by Digital Europe of non-stationary and battery-driven products. This means that the regulation would no longer cover some of the products which it covers currently. However, it is not sure how many battery-driven products without LV EPS there are, and this could

potentially leave a larger loophole than the current exemption. However, the loop hole of SNE with LV EPS will be closed with this proposal, as it is within the intersection of stationary products and products with LV EPS. However, in both scenarios, the battery-driven products with LV EPS would be exempted. However, we propose to remove the exemption totally to assure a level playing field.

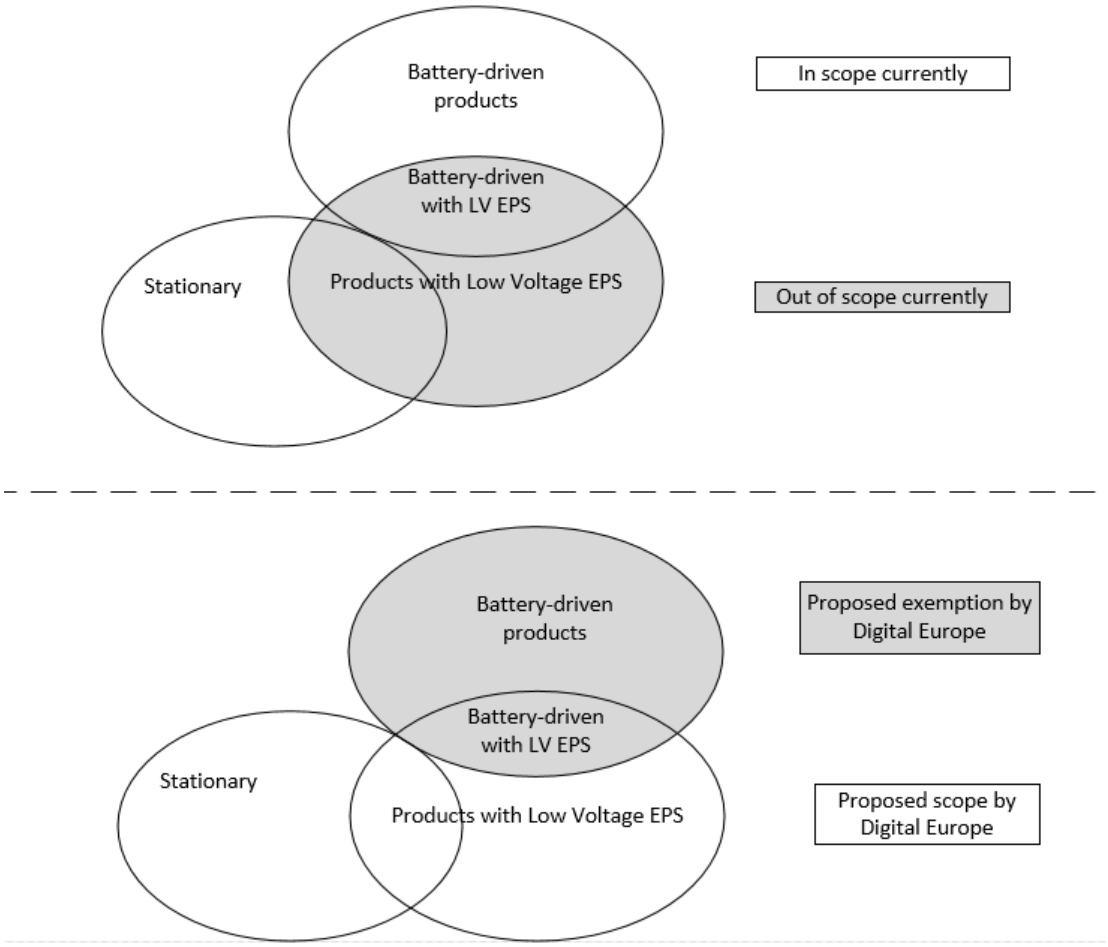

Figure 1. Visual presentation of proposed exemption related to LV EPS products by Digital Europe.

4. Extended assessment of the compliance of Tier III level of requirements for non-HiNA products

Introduction

The Standby Regulation specifies a level of requirement of 2 W in January 2019 (Tier III) for networked standby of non-HiNA equipment. In the report from the review of the Standby Regulation potential annual energy savings were calculated at about 13 TWh in 2030 if Tier III will be maintained.

However, further input has been received from industry in the last months pointing at specific products which were not assessed in the review report and that may or will have problems to comply with Tier III level. This section shows the results from investigating and assessing these products.

The industry's overall point is that the current level of 3 W should be maintained also after January 2019. In a commenting document from DIGITALEUROPE they specifically point out the following examples of equipment which cannot meet Networked Standby target of 2 W:

- New networked scanners
- AV receiver
- Games consoles
- NW standby support of Android IP STB and DOCSIS Android IP STB
- DOCSIS 3.0 issues

These examples are assessed in the following subsections together with other examples.

Miscellaneous appliances

DIGITALEUROPE states in their commenting document that new networked scanners have an estimated networked standby consumption of 2.4 W due to use of SoC (System on Chip). No further data have been submitted. They also provide the example of AV receivers, which is stated to consume 3 W (includes power consumption of HDMI, WLAN and Bluetooth) with the newest generation of SoCs with more advanced power management functionality consumes.

The sole fact that a product contains a SoC and has wired as well as wireless LANs should not impede compliance of a 2 W networked standby requirement. The level of functionality in the networked standby mode is reduced to the network interfaces and the power management functionality of the SoC to power up the necessary SoC functions. A benchmark example was provided by the study team in the draft version of the final report: Apple TV (September 2015 version) consumes 0.36 W in networked standby. It has a SoC (A8 chip) and connects to a LAN via Wi-Fi (802.11ac) and 10/100 BASE-T Ethernet and connects to a TV via an HDMI 1.4 connection. The newest Apple TV 4K has a network standby level of 0.35 W.

The verification procedure in the regulation prescribes for testing of networked standby requirements, that one port at a time is tested and remaining wireless ports are deactivated and remaining wired ports re disconnected. This makes it possible to reduce power draw for the ports.

Game consoles at 5 GHz

Sony's testing of game consoles such as PS4, reveals that in networked standby mode at 5 GHz the console may consume between 1.5 W and 2.4 W due to variability in the components. Information from Sony indicates that this is due to architecture, which includes a network proxy chip and a north/southbridge and due to the separate power supply for low power modes, which has to operate between about 0.5 W and 10 W. Sony indicates possible technological developments, which however is not possible to complete in due time of effective date of Tier III.

The study team proposes that all games consoles – due to their architectural platform in areas quite similar to computers – will be exempted from Tier III requirements until 1 January 2020.

It is needed to define games consoles. We propose the following definition based on "Self-Regulatory Initiative to further improve the energy efficiency of Games Consoles"[35]: *'games console' is a computing device whose primary function is to play video games. A games console shares many of the hardware architecture features and components found in general in personal computers (e.g. central processing unit(s), system memory, video architecture, optical drives and/or hard drives or other forms of internal memory).*

The market share for game consoles which have the possibility of using dual-band at both 2.4 GHz and 5GHz is significant, covering at least 71% (the newest update for PS4 and Xbox one) of the total sales presented in Table 10, this amounts to ca. 9 million units in 2016.

Android IP Settop Boxes

DIGITALEUROPE has provided an example of Android IP settop boxes, which supports wake on cast, which is a signal sent from another device on the network. DIGITALEUROPE states that the network interface of the product to be woken up is not able to handle these wake on cast signals and the SoC (System on Chip) should therefore be active to be able to react on the signal. This would require about 2.2 W according to DIGITALEUROPE. Measurements by the study team of Google Chromecast Ultra (also supporting wake on cast) show power levels not above 1.5 W in active mode with both HDMI and Wi-Fi ports activated. This is a level, which provides room for additional functionality up to the maximum level of 2 W.

Complex Settop Boxes with DOCSIS technology

The industry has stated at the stakeholder meeting in October 2015 and in a position paper from DIGITALEUROPE that cable CSTBs (Complex Settop Boxes) have difficulties in complying with the Tier III level of requirements for non-HiNA products. This is detailed in the draft final version of the review study report, where the conclusion was it "....seems to be challenging, but not impossible..." to comply with 2 W.

We have further assessed this based on updated information from one CSTB manufacturer and one chip manufacturer. The CSTB manufacturer informs that the difficulty in complying will be worsened with-in the next 3-4 years. The reason is that the current non-HiNA CSTBs use older DOCSIS versions (below version 3.1), which require less power compare to DOCSIS 3.1, but in near future chips only supporting older DOCSIS versions will not be available on the market. Therefore, it is expected that the power con-sumption will increase.

The study team sees the problem as inherent in the DOCSIS protocol and based on the information and data made available to us, we do not see any technical possibilities in reaching the 2 W level for non-HiNA DOCSIS settop boxes.

We will therefore recommend that settop boxes using DOCSIS are exempted from Tier III of non-HiNA and consequently can continue consume 3 W.

[35] https://ec.europa.eu/energy/sites/ener/files/documents/Games%20Consoles%20Self-Regulatory%20Initiative%20V1%20-%20Final.pdf

Digital signage displays

Digital signage displays are so far included in the scope of the draft Commission Regulation on ecodesign requirements for electronic displays. In spite of being in scope, these products are exempted from the energy efficiency requirements, including requirements on standby, networked standby, off mode and availability of off mode (however, they are not exempted from information requirements in Annex IV). DIGITAL EUROPE suggests that the requirements on these products shall be dealt vertically, and the study team agrees with the premise that they are included in the Displays Regulation.

Digital displays integrated in whiteboards

Digital displays integrated in whiteboards are covered by the latest draft of the Displays Regulation but are also exempted from all the energy efficiency requirements, and from the information requirements.

DIGITAL EUROPE claims a similar problem as for signage displays and recommends to cover these products in a vertical regulation. The study team agrees with the premise that they are included in the Displays Regulation.

5. Clarification of definition of professional equipment for IT equipment

In the current standby regulation, IT equipment in scope of the regulation is defined as "...equipment intended primarily for use in the domestic environment" (excluding some product groups included in Commission Regulation (EU) No 617/2013), where "domestic environment" for IT equipment was defined in the recitals as "class B equipment as set out in EN 55022:2006".

The review study identified several issues referring to the class B, where some products were class A and not included even though they would be considered to be typical office equipment. Examples include an A4 color laser printer, monthly page volume 2000 to 6000 pages, print speed up to 40 ppm and a 49" signage display. Similarly, there were class B products, which would not be considered as typical office equipment but due to the A/B classification, they are included. An example is larger switches used in large datacentres.

The conclusion of the review study was that class A/B definition does have its limitations by being more arbitrary and only indirectly linked the overall scope of the regulation and thereby no precisely defining the products to be in scope. However, it also proved difficult to find a precise definition to substitute the reference to class A and B. Some proposals were included in the final review study report.

During this technical assistance study, we have looked more into alternative definitions, which could be purely descriptive or could be maintaining the class A/B definition and supplementing with descriptive definitions exempting some products and including other products.

We have also also taken into account comments received from the industry with specific text proposals for additional descriptive conditions to the class B definition for being in scope. I.e. this proposal would exempt some class B products.

A disadvantage of a new definition is that it will be more difficult for manufacturers and for Market Surveillance Authorities to judge if a product is in scope or not because there is an element of interpretation in it, when it is not enough to look at if the product is class A or class B.

Our conclusion is that even though the current class A/B definition has drawbacks, the alternative might create more uncertainty and difficulties. Therefore, we recommended to keep the current definition of IT equipment.

6. Other technologies

Professional projectors

Projectors intended for use in larger venues, halls etc. currently fall under the scope by because they are considered to be part of the definition of consumer equipment (Annex I, item 3) due the part of the definition stating "..other equipment for the purpose of recording or reproducing sound or images...". These projectors cannot comply with current and future levels and should be excluded from the scope. A definition of those is based on the fact that they have mechanisms to exchange lens to other with different focal length to adapt the projection to various sizes of the venues. Annex I, point 3, last sentence should be revised accordingly:

*And other equipment for the purpose of recording or reproducing sound or images, including signals or other technologies for the distribution of sound and image other than by telecommunications, but excluding televisions as defined in Commission Regulation (EC) No 642/2009**, and excluding projectors with mechanisms for exchanging the lenses with others with different focal length*** (added text in **bold**)

Inclusion of HDBaseT as HiNA

The current definition HiNA is "... equipment with one or more of the following functionalities, but no oth-er, as the main function(s): router, network switch, wireless network access point, hub, modem, VoIP telephone, video phone;". The industry has stated that network switches used with the industry standard HDBaseT in the professional AV market has functionalities similar to those of an IP network switch, but due to definition of the network switch, HDBaseT switches are not considered as network switches.

The current definition of network switch is "... a network device whose primary function is to filter, for-ward and distribute frames based on the destination address of each frame. All switches operate at least at the data link layer (L2);". Supporting Data Link Layer classification protocol is optional for HDBaseT and HDBaseT switches cannot be comprised by this definition.

HDBaseT is an industry standard developed by the HDBaseT Alliance comprising more than 170 mem-bers globally according to the alliance. The standard allows sending audio, video, USB, Internet and control signals and power over a single LAN cable for up to 100 meters. Signals can be send directly between units or over a switch (HDBaseT Switcher or Switching Matrix). Adaptors allow signals to be converted to e.g. HDMI and USB signals.

HDBaseT switches however can be considered as "hub" because the functionality of the HDBaseT switch falls under the hub definition: "..a network device that contains multiple ports and is used to connect segments of a Local Area Network;"

HDBaseT switches are therefore considered to be HiNA equipment already in the current regulation.